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ABSTRACT

This is a report of the 10th annual Aspen Institute Roundtable on Information Technology (Aspen, Colorado, August 2-5, 2001). Participants were also polled after the events of September 11, and these comments have been integrated into the report. The mission of this report is to take a wide-ranging look at the trends that are defining the next new economy. This report on the "Internet time lag" encompasses five broad areas in which participants addressed sets of questions about the long-term consequences of the information revolution: economic consequences; the future of the corporation; social consequences; political consequences; and ramifications for globalization. Each of these areas is discussed in detail. The report concludes that the Roundtable participants struck an optimistic tone and agreed that things can eventually change for better. Although no one can predict with reasonable accuracy the true long-term consequences of today's epochal innovations, it is vital to recognize that the Internet time lag will be felt sharply over coming decades. There is much to be gained by anticipating the effects on the economy, corporations, human socialization, politics, and globalization. Only in doing so can the barriers in the way of success be removed. An appendix includes a list of conference participants; author biography; brief description of the Aspen Institute Communications and Society Program; and previous publications from the Aspen Institute Roundtable on Information Technology. (AEF)

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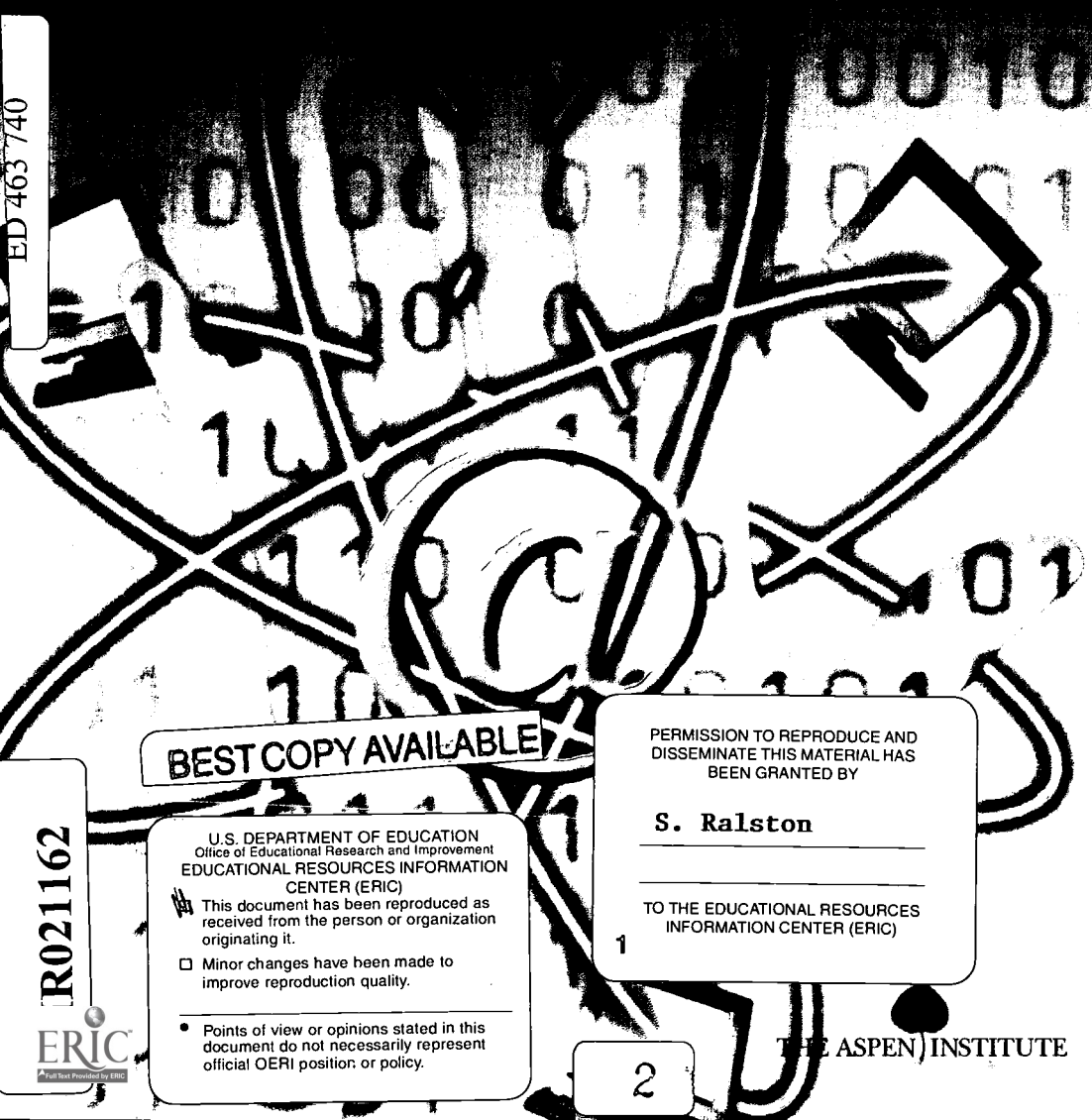
Evan I. Schwartz, Rapporteur





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Roundtable on Information Technology

Evan I. Schwartz
*Rapporteur*

THE ASPEN INSTITUTE

*Communications and Society Program*
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Washington, DC
2002

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# Contents

# Foreword

The following is a report of the tenth annual Aspen Institute Roundtable on Information Technology. This gathering of very high-level leaders and experts from the communications, information, financial, academic, economic, and governmental sectors has the purpose of finding new insights from changes brought about by the communications and Internet revolutions. The Roundtable was held in Aspen Colorado in August 2001. Our rapporteur, however, also polled participants after the events of September 11 and has integrated those comments into the report.

For the past several years this Roundtable has celebrated advances brought about by the combination of communications technology, globalism, and entrepreneurialism. Although the group has expressed concerns for the social consequences, by and large it has ridden the technological wave up and, like most of the informed world, spoke in and of Internet time. The descriptions and publications of the most recent forums are available at www.aspeninstitute.org/c&s/rit.html.

Of course the Internet and telecommunications bubbles burst in 2000–2001. Therefore in the summer of 2001 we took the opportunity to assess the longer-term consequences of these revolutions. Is the Internet an epochal invention, a major driver of the economy for many years to come, or just a passing fad? Will the new phenomena of recent years—such as the contraction of hierarchies, instant communication, and lightning-fast times to market—last beyond the funding bubble? What is the next new economy? What are the broader social consequences of the answers to those earlier questions?

The discussion was far ranging, beginning with defining what an epochal invention is and whether the Internet and other information technologies fit that description. We heard from several economists, all of whom regarded the Internet as a long-term benefactor of the economy, increasing measured and unmeasured productivity. Participants then explored the impact of these technologies on industry, politics, and society. We were fortunate to have several economic historians present to compare the most recent phenomena to those of earlier eras. One comes away from this year's Roundtable with

a better appreciation for certain historical themes that seem to recur over time, as well as with the understanding that we cannot be complacent in thinking about our own epochal problems and solutions.

## Acknowledgments

I would like to thank Evan Schwartz for pulling together the strands of many conversations—those disparate voices at the conference, their responses after the events of September 11, 2001, and some outside inputs—and delivering a coherent, insightful document. We give our thanks as well to corporate sponsors for this event: Accenture Technology Ventures, BEA Systems, Nortel Networks, and Warburg Pincus. Finally, we thank Jerry Murdock, co-founder of the roundtable, and Sunny Sumter-Sana, project manager, for bringing the conference and publication to fruition.

Charles M. Firestone
Executive Director
Communications and Society Program
The Aspen Institute
Washington, DC
January 2002

# THE INTERNET TIME LAG

# The Internet Time Lag

## Introduction

Like all epochal inventions that revolutionize society and define an era, the Internet has both short-term effects and long-term consequences. The overwhelming focus in recent years has been on the short term, symbolized by the fixation on something known as "Internet time"—a conception that the information revolution has produced a speeding up of business processes, economic cycles, and life in general. Since the bursting of the dot-com bubble in the spring of 2000, however, much of the thinking about Internet time and other superficial notions has been exposed as hyperbole and dangerous fallacy.

Meanwhile, during the United States' national obsession over "getrichquick.com" schemes, much of the longer-term consequences of the Internet in particular and the information revolution in general have gone underexplored. This report is an attempt to shift the focus to the long term, away from the unsustainable business models and overoptimistic projections and toward the broad economic, business, social, and political consequences of the Internet, as well as its wide-ranging ramifications for the process of globalization.

In the aftermath of the tragic events of September 11, 2001, such a focus has become more imperative. We now know that the network of terrorists who attacked the World Trade Center and the Pentagon made full use of all of the technologies that drove the thinking of our discussion, which took place several weeks prior to that pivotal day. The hijackers and their supporters used e-mail, Travelocity.com, automatic teller machines (ATMs), data encryption, international money transfers, cell phones, credit cards, and the like. In the words of Thomas Friedman of *The New York Times*, it's "*jihad* online."[1] Some of the unintended consequences of the Internet and the freedoms it symbolizes are now rushing to the fore. Today's terrorists are a mobile, global workforce that directly benefits from the interrelated forces of globalism and information technology that are driving so much change in the world.

The mission of this report—to take a wide-ranging look at the trends that are defining the next new economy—is best defined by two of our participants: "The dot-com bubble was about lots of experiments to figure out what kinds of business models would work," said John Kunzweiler, general partner with Accenture Technology Ventures. "It was totally overfunded, but it had nothing to do with the real transformation. The real transformation is going to take place over the next decade or two. It will totally change the economics of doing business across the entire world—and it will have a huge impact on governments and individuals."

"We have learned that there are big lags between invention and the full social effects, both for good and for ill, and that was certainly true in the case of electricity and cars," said Robert E. Litan, vice president and director of the Economic Studies Program at the Brookings Institution. "Everyone talks about Internet time and how everything has speeded up and so forth, but I suspect that we are going to see the same time lag with the Internet: long lags before the big effects really take place."

This report on what we are calling the "Internet time lag" encompasses five broad areas in which our participants addressed the following sets of questions about the long-term consequences of the information revolution:

1. *Economic consequences.* What is the long-term prognosis for the economy? What are the implications for economic growth, productivity, employment, the business cycle, financing of new ideas, the gap between rich and poor, and living standards?
2. *The future of the corporation.* Which trends will disrupt the structure of the corporation? How big should corporations be? What is the effect on the distribution of goods and services, manufacturing, management, the demand for talent, outsourcing, finance, and pricing?
3. *Social consequences.* What are the moral and social issues involved in these ramifications? How will advances in technologies affect families, communities, societies, and cultures?

4. *Political consequences.* What is the prognosis for government intervention in the economy? In the wake of September 11, will new technologies (biometrics, surveillance systems, etc.) now be funded in the name of national security and anti-terrorism? What are some of the policy solutions to our global conflicts?
5. *Ramifications for globalization.* Why is much of the world pushing back against some of the effects of technology and globalism? What is the "American business model," and how is it perceived around the world? How will the war on international terrorism transform alliances and disputes between nations? How can we bridge the gap between the winners and the losers, and how can the economic benefits be brought to people who have yet to realize them?

## Epochal Inventions: Historical Context

The Roundtable moderator, Charles Firestone, executive director of the Aspen Institute Communications and Society Program, began the discussion with a far-reaching question: "What are the patterns of the past that could help us understand where we are going?"

The underlying equation on which all participants agreed is that investment drives innovation, which boosts productivity, which drives economic growth, which increases living standards. "I don't think it is possible to separate technological progress from economic growth, particularly when talking about major technological transformations and how it affects competition in the economy and the desire of firms to get ahead of their competitors," began Ev Ehrlich, a consultant and former Under Secretary of Commerce for Economic Affairs in the Clinton administration. Assuming that major innovations drive economic change, Ehrlich offered up a definition of what an "epochal invention" is: An epochal invention is one in which people will make more money from *using* the invention than the money made from the invention itself—a definition he attributed to Steve Milunovich of Merrill Lynch.

Mass production, railroads, and electricity are examples of "epochal transformation of the economy that disrupted and extended the market," said Ehrlich. Mass production of textiles brought

clothesmaking out of the home and into the factory, displacing farm workers and throwing them into employment in factories. Railroads integrated the western territories into the United States, forging the world's largest national economy. Electricity was a classic example of how great inventions can set off an explosion in productivity, inspire investment, liberate resources, and eventually lead to a much higher standard of living.

Yet there were unintended social ramifications as well. Those same technologies set off divisiveness and unrest in the new workforce and led directly to the massive labor movement of the late nineteenth century. "The first factory workers didn't understand the concept of showing up on time and working hard at someone else's direction," said Ehrlich, citing the writings of management theorist Peter Drucker. "They brought the ethos of the farm with them. And I think this is one of the acid tests for epochal technologies: Epochal inventions demand changes in social relations."

History is rich with stories of how watershed innovations transformed business and society in unexpected ways. Professor Hal Varian, dean of the School of Information Management at the University of California at Berkeley, told several such tales. Varian focused on "simultaneous invention," the phenomenon by which separate inventors, working independently, come up with similar inventions at virtually the same time—including Howe and Singer (the sewing machine), Edison and Swan (the incandescent lamp), Bell and Grey (the telephone), and the many co-inventors of the automobile, the digital computer, and the personal computer:

- In the case of Elias Howe and Isaac Singer, the dispute over patent rights between these two men led to the formation of the first industrial patent pool, a powerful monopoly that drove massive productivity gains but clamped down on competitors at the same time—not unlike the Microsoft monopoly of today.
- Guglielmo Marconi, the inventor of the wireless telegraph, refused to interconnect his network with those of his rivals, and his standard gained such a critical mass that Lloyd's of London decided that it would only insure Marconi brand gear, making it impractical to install rival equipment. Like Howe and Singer, Marconi also experienced the "network effect" of seemingly

unstoppable growth that many Internet businesses aim to achieve today.

- In 1923, when the radio broadcasting boom inspired widespread speculation and euphoria, the burning question of the day was how to make money in this business. What is the business model for providing free content? AT&T came up with the idea of national networks sponsored by advertising—a concept soon co-opted by RCA's NBC network in 1926. This business model led to national brands that transformed all consumer goods industries.

All of these transformations have several key features in common: They took decades to achieve, and many of the long-term consequences were not anticipated by the original inventors or the initial users of these inventions. Another common feature is the need for massive amounts of capital to finance the spread of epochal inventions. "It was no coincidence that Edison located his first power plant very near Wall Street," said Robert Hormats, vice chairman of Goldman Sachs (International). "The pitch for the money was important. He aimed to dazzle investors, and the hype created a surge of investment in his plants and others. There was so much new investment in this sector that it led to overcapacity, and many plants eventually went bankrupt."

Predicting the rate of return on early-stage investment is treacherous. "It's not possible to forecast what the return on investment will be and who will capture it," said William Janeway, vice chairman of Warburg Pincus. Yet Janeway noted that epochal inventions are often "financed by a professional class of intermediaries that sit between capital and inventors. Many developments are funded by bubbles, which are nonrational economic phenomena that are fundamental to capitalism." Another way to fund such innovations, Janeway said, is by government decree, under the "rationale of national development or national security." The common equation, he noted, was best expressed by economist Joseph Schumpeter, who said that innovation equals invention plus capital.

The investment boom surrounding the original electrical infrastructure bears an uncanny resemblance to the excess funding of Web ventures of the recent past. In the case of electricity, the real transformation happened much later, when the invention was fully

integrated into society. "It was disruptive of old ways of producing goods. It radically altered the way plants were laid out and the production process was organized. And it had a profound social and political impact as well," added Hormats. Productivity gains from electric lighting, electric appliances, and electric machinery led to enormous gains in economic growth and countless innovations that were not envisioned by Edison or the early users of his inventions.

Often unanticipated, these follow-on innovations that stem from epochal inventions can be referred to as "second-order innovations," according to Juan Morán, chairman and CEO of a Madrid-based enterprise software consultancy. Morán raised the following question: What are the second-order innovations of the Internet? "The Internet is an interconnected brain that leads to more innovations—more so than the car because computers are connected; cars were not. The Internet behaves in many ways like a living ecosystem producing new forms of life (business models, services, games, and languages). This implies an acceleration in the rate of innovation."

Anticipating those second-order innovations and their wider economic, political, and social consequences is a difficult but vital task. "At any one moment in time, there is more technology available than anybody knows what to do with," remarked William Coleman, founder, chairman, and CEO of BEA Systems, a Silicon Valley enterprise software developer. Sometimes, the process of integrating all of the new technologies into society will result in positive consequences, such as the current emergence of the new field of bioinformatics—the process of using information technology to understand and apply knowledge of the human genome to improve health care. Yet sometimes this process of integrating different technologies leads to profoundly negative consequences, such as the terrorist attacks of September 11, 2001.

History tells us that this is so. "I do not believe that 'Internet time' is anything any different than what happened before," said John Kunzweiler of Accenture. "We still have that 50-year incubation cycle to figure out how to use something, and we have a long period of build-out because it's more about dealing with a long social and cultural process." For most of the discussion, the participants addressed these long-term consequences for the economy, for corporations, for political institutions, and for the process of globalization.

## Economic Consequences

The late 1990s saw a substantial jump in worker productivity in the United States, which many economists attribute to a much more pervasive use of information technology. Robert Litan cited a new Brookings study showing that productivity in eight of the largest sectors of the economy experienced an average annual increase of one-quarter to one-half of a percent between 1995 and 2000. That's a big deal, Litan said, because small percentage increases in productivity translate into huge gains in the standard of living. It probably was no coincidence that by many measures the late 1990s were a golden age of economic well-being in the United States.

Litan warned, however, that such numbers and correlations are "subject to considerable uncertainty"—even more so when economists try to predict the productivity gains of the future. In addition, such studies cannot accurately take into account benefits such as the convenience of buying consumer goods online from Amazon.com or the benefits of ordering customized computers from companies such as Dell. "What's immeasurable are the effects that flow from the Internet," said Litan, "but these effects still are important as a matter of economics."

Indeed, these effects are most relevant in examining competition. "Two-thirds of productivity growth comes from firms with higher productivity taking market share from those with lower productivity," said Ehrlich. "New technologies not only transform the economy, but they help firms do transforming things."

Since September 11, "the outlook for the global economy in the short term is obviously much more negative than before," Litan said. Over the longer run, a key issue is whether the productivity rate trend will be affected by this economic downturn. Litan saw both positive and negative consequences. "On the downside, there will now be more public and private sector spending on security, which will act like a security tax, and act as a drag on measured productivity growth (since we have higher inputs, but no extra measured output). Also on the downside, perhaps less appetite for risk-taking, which in the short run may mean less spending on equipment (especially information technology), which will reduce capital spending and thus detract from productivity growth."

"On the positive side, less air travel for business and more use of the phone [and perhaps the Internet and video-conferencing] is likely to be productivity enhancing," Litan continued. The economic downturn has already contributed to a rise in unemployment, and layoffs began accelerating after September 11, but as displaced workers "percolate throughout the economy and work for more stable firms, this should transmit [Internet] skills to old economy firms and help."

Productivity numbers and economic growth numbers are not extremely useful in that they do not tell us which parts of the economy are growing and which are shrinking; they only tell us what the entire economy is doing. "The interesting thing is the mix," said Hormats. As an example, he cited the specific parts of the auto industry that are generating an increasing share of economic activity. "The actual manufactured product has stayed pretty much the same or actually gone down a little bit [in cost]," he said. "The amount spent on the service component of the product or the retail component of the product has actually gone up quite substantially. The real value added comes with the financing, the connection of the car to a satellite—a whole range of other value-added components that are one way or another surrounding that auto either when you buy it or in the years after you buy it. Services and technology are embedded in the business cycle and are a much larger component of the value added, even for something as basic as a car—which is really now a technology machine and a communications center."

For the service sector itself, information technology is beginning to trigger a huge transformation. "The most essential contribution of information technology might be that it is allowing firms in the service industries to become scale-based competitors perhaps for the first time," commented Ehrlich.

As localized service operations merge into national and global conglomerates, information technology plays the pivotal role. The dynamic is similar, Ehrlich said, to the shift from blacksmiths and local iron forges of the 19th century to assembly lines and mass production factories of the early 20th century. "Our banks are becoming like asset manufacturing plants. And our health care companies are becoming like diagnosis manufacturing plants, and the rules of that standardization and routinization that have long eluded the service sector are now taking root because they finally have the technology."

Whereas major manufacturing productivity increases have already been realized in prior decades, service sector productivity holds the key to future transformations. "It allows us to lever the service worker," added Ehrlich. "That is epochal in that service firms will use that ability to compete with each other, which is why we see this massive scale building in the service industries today, producing collateral effects like what is called the 'winner-take-all economy'—which to me is no more than how scale-driven competitors behave and have always behaved—and, in the aggregate, is producing stunning productivity gains in the service industries. In my view, that's what's enduring about the productivity shifts of the last decade." These kinds of changes are having a direct impact on companies across every industry.

## The Future of the Corporation

Information technology unquestionably is transforming the way companies operate and how they are structured and organized. The corporation that tries to be good at everything is endangered, according to some Roundtable participants; such companies need to focus on what they do best and "unbundle" the rest. John Hagel, chief strategy officer for 12 Entrepreneuring, argued that traditional corporations have always performed three main business tasks: (1) the customer relationship tasks, which involve marketing and customer service and "identifying specific customer segments, getting to know those segments, and becoming more and more helpful based on the knowledge of those segments"; (2) the infrastructure management tasks, which encompass payroll, accounting, billing, manufacturing, supply chain management, and other "large-scale routines and activities, including managing a logistics networks"; and (3) product innovation and commercialization, which involve "coming up with creative new products, getting them to market quickly, and accelerating adoption."

Increasing numbers of companies are choosing to do one of these tasks and outsource the other two, according to Hagel. Many large credit card companies just do billing and collection, for example, but outsource everything else to outside firms. Computer makers now often outsource much of their manufacturing and product innovation and simply take care of the logistics of the business. "You don't need to be in

all three of these businesses," said Hagel. "I can choose to be in one of them and rely on other companies to supply the other two major business components."

One ramification of this trend may be the rise of large-scale enterprises that take on such work for large numbers of firms. For example, Automatic Data Processing has performed payroll functions for years, FedEx is taking on more and more third-party logistics, and Flextronics is becoming a large-scale contract manufacturer. Such new models extend, in powerful new directions, Adam Smith's conception that division of specialized labor is a primary driver of economic growth, noted Ehrlich.

Another ramification for the structure of firms is increased ability "to effectively coordinate economic activity across enterprises," added Hagel. "I think here what we're going to see is the opportunity to shift focus for management from managing at the enterprise level to managing at a value chain level, and that the people who recreate the most economic value are those who do what I would describe as industry process re-engineering or optimization as opposed to enterprise re-engineering." Add it all up, and what you have is a fundamental rethinking of the enterprise. "We are going to face massive economic restructuring," he added. "This isn't just a question of doing business things faster and cheaper but an opportunity to really rethink at a fundamental level what business you are in and how you do that business and what kind of relationships you have with other businesses."

Sometimes new technologies backfire, and the technologies that are supposed to help companies manage such transformations don't live up to the early hype. To a large extent, the collapse of so many companies in the telecommunications and telecommunications equipment sectors over the past couple of years had to do with faulty supply chain management and erroneous forecasting of demand. "In telecom, we have seen the most fundamental catastrophe," said Bill Janeway of Warburg Pincus, "right up with the level of the 1930s with respect to the flattening of demand leading down to 50 percent reductions that were completely unanticipated." Investors had to write off about $650 billion in telecommunications company bonds alone. "Sure, part of the story is about the bubble funded by Wall Street, but companies like Nortel and

Lucent and their suppliers and chip companies are now saying that we have no idea what we are going to sell six months from now. Now this is not the way it was suppose to work, guys!"

Here is where the belief in "Internet time" did major damage. The urge to cut down response times and have systems do business planning essentially eliminated the role of old-fashioned human judgment. Supply chain management systems kept doubling and tripling their orders precisely at the same time that demand for the finished goods was entering a meltdown. "The problem," concluded Eric Schmidt, former CEO of Novell and new chairman and CEO of the Internet search engine Google, Inc., "is that the marketing of many of these businesses was essentially fallacious."

As is typical with innovations large and small, too many people "underestimated the integration," said Edward Jung, a former Microsoft executive and cofounder of Intellectual Ventures. "If you think about the supply chain management systems, the integration part of it actually slows down the ability to actually do something like forecasting." Thus, as firms installed these new systems, they were lulled into the belief that everything was going smoothly, when in fact they only had the "illusion" that they knew how to match supply with demand. They had no idea that business was headed so far south.

Technology almost always takes a longer time to get right than even the longest estimates. Bill Coleman said it took his company, BEA Systems, at least five years to develop its software and put in place an online distribution system that would enable the company to survive the onslaught of competition in its market. "We don't deliver anything physically," Coleman said. "When you download our product, you download our entire product line, although it's only enabled for a small part." The customer is then offered incentives to purchase more and more of it: "It's like a vending machine." This strategy is how BEA became large enough not to be trampled by competition.

When a company, an innovation, or an idea reaches a critical mass, it can trigger "network effects" and thereby become self-perpetuating. A prime example is eBay: It is far more efficient for buyers and sellers to join a large network rather than opt for a small one, even if a rival network has lower costs. "Network effects are the most powerful trend in business, with the exception of the monopolies," said venture

capitalist Jerry Murdock, cofounder and managing director of Insight Capital Partners. Simply put, the more people who use a networked technology, the more valuable the network becomes. This has been true for many technologies throughout history, from the Marconi telegraph network to the Bell phone system to the early radio broadcast networks to networks of standardized fax machines to the Internet and the Web, as well as newer private networks such as eBay and PayPal (the online payments system). As these network effects take root, they often trigger major social changes as well.

## Social Consequences

Just a couple of hundred years ago, the average peasant in an emerging country might come in contact with a few hundred different people in the course of his or her life, noted David Konzevik, an independent consultant and lecturer from Mexico. By 1930, because of the revolution in personal travel, that average person might come into contact with thousands of different people. Today—because of television, the Internet, and other communications tools—that person knows in real time the way millions of people live and from that very moment becomes aware of his or her real situation.

We are living in an age in which it is common to see people "jabber-walking"—strolling around chattering on wireless headsets. Citibank is giving out free cell phones in developing countries to sign people up for electronic bank accounts. In Japan, young men and women hanging out in bars turn on their Lovegety's—special pagers that ping one another when they detect a match between their electronically stored social profiles. In the future, "smart dust" particles will transmit bits of information through the air, and implanted medical devices will receive information and deliver doses of medicine to people's bodies.

When millions of people spend hours talking to strangers in chat rooms and Instant Messenger sessions, the Internet is impinging on our time in new ways, said Ehrlich: "Free information is cannibalizing public space and private time and bringing that time into the realm of the market."

"The rate of innovation is too fast to absorb," said Jean-Charles Bachellerie, managing partner of Paris-based Tioga Venture. "The real wild cards are society, culture, and human nature." Startups such as Webvan missed the human nature question, Bachellerie noted, because

it invested billions of today's dollars well before it could get people to change their age-old food shopping habits.

What are the social consequences of Moore's Law, the dictum that microprocessors will double in raw power every 18 months? "There is a combined impact of network effects and Moore's Laws that will substantially increase the intelligence on this planet," said Juan Morán of Newknow. "The Internet will be built around a massive network of human brains, substantially improving the learning of each of them. And Moore's Law will create computers that will be able to emulate human intelligence or even surpass it in many areas. It's very clear that in 30 years we will see for $1,000 you will be able to buy a computer more intelligent than a human."

"I fundamentally disagree," countered Bill Janeway. "We've been hearing the artificial intelligence dream for more than 30 years," he said. "We haven't gotten there, and we never will because technology can never act as a substitute for human interpretation and judgment." Hal Varian of the University of California's School of Information Management noted that most of today's approaches to artificial intelligence involve not the reconstruction of human logic but a statistical method, best exemplified by the chess-playing computers that have achieved success against humans. Through brute force computation of all the options, these machines work well in narrow areas, yet they certainly aren't intelligent in any human sense.

Computers will at least allow us to understand more about people as social beings, said Eric Schmidt. He cited his company's product—Google, the world's most popular search engine—as an example. Traffic has been growing about 15 percent per month, up to 135 million queries submitted in a recent week. The company has 10,000 computers to process it all, and it expects to add thousands more each year—all in an attempt to satisfy what people actually want from the Internet, as opposed to what they simply say they want. Schmidt holds out grand possibilities for "data mining" billions of queries. "It is then possible to do computations that had not been possible before on the world's data" and understand people socially in new ways.

Yet as the Internet gives rise to new social structures and a deeper understanding of people as social animals, it may end up setting off unintended political effects.

## Political Consequences

Politics and communications technology have always been intertwined, and advances in information technology will continue to drive political change in the future, especially as events trigger long-term transformations.

The Civil War and its affect on the postal system is one such example. "Originally, people came to the post offices to get their mail," explained Ruth Goldway, commissioner of the U.S. Postal Rate Commission, "but President Lincoln didn't want all these women receiving letters about their husbands dying all together at one place, so there was funding established by the government to provide for a postman to go to the individual homes. Before that you would have to pay for delivery. So here we have politics creating an information delivery system. Once free delivery was established, Sears Roebuck developed a catalog, and the catalog created this distribution of goods through the mail around the United States, and similar things happened around the world."

The tragedy of September 11, 2001, is already beginning to drive comparable changes, Goldway added, most obviously the reforms required to stop the spread of bioterrorism being postmarked and delivered along with the daily mail. There is an urgent need now to replace the mantra of "market efficiency" with what she called "a balance for system-wide duplication of various networks." That will require a massive deployment of infrastructure, funded in large part by government. "We need planes and trains, computers and postal service, hard-wire and cell phones, private doctors and public clinics, national electric grids and decentralized power sources, laser beam bar-coded ID security, voice recognition, automated translation, and well-trained people who can read, write, and speak many languages. This requires more ongoing baseline public expenditures than we thought necessary in the 1990s."

This increased spending on a heightened security infrastructure happens to be an example of activist government. Indeed, one of the major ironies stemming from the events of September 11 is an unintentional return to Keynesian economics, in which government spending once again assumes a central position in political and economic affairs, for the first time in a generation. "Irony indeed lives, as a Republican president rediscovers Keynes in the teeth of those who

had been his most dogmatic backers," noted Bill Janeway. "Economic analysts and commentators of all denominations had taken to talking about 10- to 30-year forecasts of budget surpluses as if they were guaranteed by a higher power. The smashing of the Social Security lockbox and the freeing of the federal government to play a responsible role in short-term macroeconomic policy is perhaps the most positive unintended consequence of the fanatics who seek to destroy modernity. Even the most ideologically committed players in the American political game, the Republican House leadership, have woken up to this threat."

On a geopolitical level, the world is being reshaped by recent events. "Tragedy is history's pivot," writes Michael Wines, Moscow correspondent for *The New York Times*. "The question now, as a single breathtaking act of horror cracks old alliances and snaps together unlikely new ones in their place, is whether a modern madman has swung history onto a new axis, with ramifications far from his own intentions. But to grasp how profound these tectonics are—and how unpredictable—look first at Moscow. It is no exaggeration to say that the events of September 11 may be delivering what Peter the Great, the empress Catherine, and President Boris Yeltsin could not: a Russian state anchored solidly in the West, for the first time in a millennium. By shattering the notion of a sole American superpower that could single-handedly build global stability and prosperity, those events may have removed the biggest obstacle to Russia's final integration with the West."[2]

Every global economic policy and political alliance needs to be reconceived in the fight against terrorism. "The contradictions in our foreign policy and world trade dynamics have exploded," remarked Goldway. "We may shift the balance of our oil purchases from the middle east to Russia and the former Soviet republics. Meanwhile, the cooperation that is developing between Russia, NATO, the U.S., the UN and China is encouraging and bodes more peaceful times and even greater stability if we can contain this immediate threat."

Technology has not only become a key factor in containing terror, it must play a key role in reforming the social and political structures of failing nations around the world, Goldway argued. "How can we use the many technological advances that we detailed in Aspen to enhance the lives of the citizens of third-world nations?"

The enormity of that task is unprecedented. In many ways, the global information revolution we are experiencing is unlike any other prior technological transformation. For those making policy, it is important not to draw too much from history for guidance, argued Stefano Rodotá, president of Italy's data protection agency. "There is a risk in relying too heavily on historical analogies, in being reductive, having the attitude that there is nothing new under the sun," said Rodotá. That could lead to what he called a "dangerous paradigm"—the view that we don't need new ways to deal with it, or that we require no political intervention at all. "We must be realists, not reductionists."

A recent conundrum for policymakers has been the debate over bioethics and the possibilities for human cloning. Rodotá said he was impressed that the U.S. House of Representatives passed a resolution forbidding any kind of human cloning. Berkeley professor Hal Varian, however, argued that this new law would prove to be insignificant in a global environment: "China has said 'human cloning, no problem, we're going ahead with it.'"

An even more urgent question stems from the technology of satellite television broadcasting. Many governments in the Middle East and Southeast Asia have taken great pains to control tightly the images and information that their citizens digest. Now, suddenly, the television network Al Jazeera, broadcasting from the tiny emirate of Qatar, can reach an estimated 300 million Arabic-speaking people in the region, and it begins to show programming that undermines governments—including everything from racy music videos to unfiltered terrorist propaganda. Addressing this kind of problem in general, Rodotá asked, "At which stage of development is it possible to intervene, in order to better control the social effects of technological innovation? Where technologies are completely neutral, it's quite impossible or very difficult to intervene."

Such questions become fantastically more complex when one considers that it is almost impossible to put the genie back into the bottle, to stop the spread of a certain technology, even when it is proving to have dangerous ramifications. That dilemma is even more vexing when we look at the problem from a global point of view.

## Ramifications for Globalization

Information technology is the key enabler of globalization. Satellite television, affordable telephony, and the suddenly pervasive Internet have forged a networked world without our past notions of borders. The globalization of commerce and culture is happening so fast that we must ask this urgent question: Has the economy become too global too quickly for too many people? "Many countries were pushed into globalization before their domestic institutions were ready," said Bob Hormats of Goldman Sachs. "Sometimes there is a pushback against globalization—against foreign competition or foreign investment as well as new technologies. Some see rapid change driven from home or from abroad as a very disruptive development. That's one of the downsides to global integration."

There are many examples of "pushback events," as defined by Roundtable participants. Bob Litan of the Brookings Institution (speaking before the events of September 11) warned of the "four viruses" that threaten our march to high-tech globalization—namely, biological viruses, computer viruses, philosophical viruses (such as anti-globalism itself), and the virus of terrorism. Sometimes, pushback events are as simple as a protest against a new Wal-Mart megastore. Sometimes, antiglobalization is expressed through courts or legislatures around the world. Sometimes, vandals attack a McDonald's restaurant or Coca-Cola plant somewhere. Sometimes, it's a violent protest, such as those in Seattle and Genoa. And sometimes, it's much more extreme, as in the case of the blind rage of terrorism against civilians.

In exploring the issue of globalization, it is important to recognize that the overall trend is far from new. "Human beings have always traded, traveled, and been interested in one another," said Derek Shearer, former U.S. Ambassador to Finland and currently director of global affairs at Occidental College. He cited a book titled *The Year 1688* as a reference point. "The author goes around the world to various countries and details little stories and vignettes of what's happening everywhere. It's astounding how interconnected the world already was in 1688." One particular character, a map maker in Venice, runs a subscription service. "Every few months," said Shearer, "he revises the map of the world based on all the information that he has collected from businessmen and travelers who come through Venice."

In the 18th and 19th centuries, Shearer added, globalization was a force imposed on the world largely through colonialism and imperialism; the effects of that globalization are now widely regarded as negative, especially in territories that had been vanquished. "It ended pretty badly," he said, "with a combination of depression and world war." What's new about the current era of globalization is the combination of the end of the Cold War with the "computer, television, and technology revolutions happening almost simultaneously," he said. "Almost overnight, you had the half of the globe that had been cut off from the developments of Western capitalism that had taken place after the war suddenly feel the effects. A lot of people in the U.S., Japan, and Western Europe got rich, and just about everybody in the world can see it all."

To a large extent, globalization is closely identified around the world with the interests of American corporations. Nine of the ten most recognized brands in the world are American; many global citizens perceive America, rightly or wrongly, as the sum of these brands and the values they project, rather than identifying America with democratic ideals such as individual liberty, free enterprise, civil rights, and justice for all. "Globalization is perceived around much the world as a deployment of the American business model," said Jean-Charles Bachellerie of Tioga Venture.

That business model, Bachellerie noted, is regarded as one in which everything is subject to the values of the market. "It's mostly based on economics and doesn't take into account some issues like quality of life, the social contract, and things like this. Many people just don't buy into this pure economic business model," and that's why we often see this "allergic reaction." For instance, contrast the McDonald's view of what a meal should be with that of a typical European family. No wonder many people see the brand as an attack on their cultural values or even their religious traditions. Or contrast America's need to consume a quarter of the world's oil production with the fact that the average citizen of a nation with a surplus of oil doesn't benefit from the sale of those resources.

There we have the global paradox. On one hand, globalization produces a network effect of seemingly unstoppable growth, noted Bachellerie. Yet it is this very force that turns many people off so vehemently. "The more powerful you are and the more you try to push

somebody to do something, the more defensive he will become," he said. This dynamic becomes most dangerous when that person has no conventional way to defend himself. Among the most extreme, anti-American factions, this defensiveness produces a "foundation to lock themselves into very negative and very defensive reactions that can lead, for example, to terrorism."

Nothing justifies terrorism, of course. To suggest that terrorism on any level is an acceptable reaction to the excesses of global capitalism is to disregard the sanctity of human life. Yet even before September 11, 2001, there was a growing sense among intellectuals everywhere that average Americans need to become more aware of their place in the world. This view is especially strong in emerging countries, regardless of whether those countries have a problem with domestic terrorism.

Globalization clashes with local politics on a fundamental level in many of those countries. "The U.S. is living in an ivory tower and doesn't understand very well what is happening all over the world, especially the new realities of democracy in emerging countries," said David Konzevik. As an example, Konzevik cited the case of Venezuela, and the day the newly elected president practically put the country in bankruptcy the moment he made his first speech. "There are two kinds of voters today," he said, "the ones who vote every four years or six years and the other ones, who are the investors, domestic and foreign, who vote every minute. This, in a nutshell, is the conflict in every emerging economy." If you aim to capture the public's vote to win an election, promising new spending and new programs, you often get an instantaneous downgrading from the global investment community. If you speak with investors abroad and cater to their wishes, the people who vote back home will know what you've said within hours, potentially causing unrest and domestic instability.

"This is why democracy and the credibility of politicians are in a state of crisis, especially in emerging countries," Konzevik said. "The direct and indirect cost of politics is too high for those countries, and the traditional idea of democracy needs to be updated in a global world."

Globalization and information technology are also producing what Konzevik called "the expectations revolution." Impoverished citizens of emerging countries can see on the Internet and on television how the

wealthiest segments of the world are living, yet they cannot obtain that standard of living. "Their expectations are growing faster than their income," he said, "and this is the most urgent issue that needs to be solved. I think that maybe 99 percent of the people all over the world...are the new lost generation. This new generation will not wait for the delivery of food and services."

This gap between "the winners and those who aspire to win," as Shearer put it, is exacerbated when the U.S. economy experiences a slowdown, as is the case right now. "The reason the U.S. economy has not deteriorated even more rapidly is that we have exported a large portion of our slowdown," said Hormats. We import so many electronic components and other high-tech goods from East Asia that those countries are getting hit hard right now. That can be particularly dangerous when one considers education levels throughout Asia and the fact that many well-educated students cannot find appropriate jobs. "There is the issue of workers coming to the U.S. and the West to find jobs," Hormats added. "China has about 450 million people who have high school and above education levels. In the next 30 years, that figure will rise to 750 million people. There's a huge increase in knowledge workers. So China is either going to attract a lot of knowledge-oriented investment, or a lot of those people are going to go elsewhere to try to find good jobs."

Globalization, therefore, produces fantastic conflicts as well as tangible benefits. "The conflict between the domestic political process on one hand and the international financial system on the other" is especially troubling, said Janeway, who drew lessons from his Ph.D. dissertation on the topic of European finance policies during the years 1929 to 1931. "This is not the first time that this conflict has surfaced," he said. "In 1931, the capital markets laid down the rules for political leadership, from Berlin to London to Latin America, and the rules that were laid down were absolutely counterproductive. They were self-destructive of capitalism. Nominally conservative governments paved the way for Hitler by following the dictates of the capital markets. They made radical efforts to slash spending, raise taxes, and balance their budgets, thereby reducing employment and national income and tax receipts. Of course, it was an unmitigated catastrophe."

Unfortunately, Janeway added, organizations such as the International Monetary Fund seem to be doing much of what "the

capital markets did to capitalism in the late 1920s and early 1930s." The policy of forcing governments to balance their budgets and slash public spending should give way to "playing a role in educating financiers as well as politicians as to what is in their own rational self-interest." Instead, he said, certain global leaders have "profoundly abdicated their responsibility in adopting a very simple-minded set of rules of the road which are virtually identical to the rules that were discredited 70 years ago."

Once again, we could be facing a series of catastrophes if we do not work to reconcile the conflicting forces that information technology and globalization are unleashing. One of the symptoms of a system in crisis is the rise of hostility toward American-style globalization, which takes its most extreme expression in acts of terrorism. Our new system gives rise to what Thomas Friedman calls "super-empowered individuals" who use the global infrastructure itself as a force multiplier.[3]

In an interview on National Public Radio, Dr. Louise Shelly, director of the Transnational Crime and Corruption Center at American University, suggested that this development is a natural outcome of our current system. "Transnational criminals are some of the major beneficiaries of globalization. Transnational crime will be a defining issue of the 21st century for policymakers—as defining as the Cold War was for the 20th century and colonialism was for the 19th century. Terrorists and transnational crime groups take advantage of increased travel, trade, rapid money movements, telecommunications, and computer links and are well positioned for growth."

That trend leads to what appears now to be an escalating arms race between these global crime groups and those that seek to stop them. "Our war," said President Bush, "is against networks." Hal Varian was optimistic that the good guys will win. "Technology is becoming more available and easier to use, so it's not so surprising that terrorists use it along with everyone else. To the extent that technology makes humans more powerful, it amplifies both the good that people can do and the evil they can do. This has been true throughout history and will continue to be true in the future. The Internet can help coordinate actions at a distance. This makes things easier for terrorists, but also easier for law enforcement. The terrorists are more flexible, can move faster, and have fewer constraints, so they are some of the first adopters. But I don't think that their edge will persist."

What is clear, however, is that fighting—and even winning—the war on terrorism alone isn't going to be enough. We must work on the complex problems that give rise to the global atmosphere that makes terrorism take root in the first place.

## A Search for Solutions

The solutions to the global problems now faced by the United States and the world at large fall into three broad categories: financial solutions, policy solutions, and educational solutions.

In terms of finance, Kathleen Kennedy Townsend, lieutenant governor of Maryland, suggested that those in charge of lending money to emerging countries need to act less individualistically and more in a coordinated fashion. If that were the case, everyone would benefit in the long run. "The financial markets really don't understand what they are doing in this regard," she said. "If you could have wiser, more aware financial markets it might reduce the problems."

Picking up on that suggestion, Bill Janeway suggested that bond holders need to be aware of the ramifications of their actions. "To the bond holder, the only thing that matters is getting paid interest and being repaid the principal," he said, "but there are systemic effects such that if each bond holder individually seeks to exercise his contractual right at a precarious moment, none of them get paid. So the failure to recognize the systemic significance for the financial structure and its fragility can lead the bond market to behave in a way that is actually irrational in terms of the participants' own self interest." Moderator Charles Firestone of the Aspen Institute called this "a financier's tragedy of the commons."

Solutions that address the common good can work well on a local level. Ruth Goldway of the U.S. Postal Rate Commission cited the example of zoning regulations that prohibit overdevelopment of land, which reduce the ability of some individual landowners to maximize the profit on their one piece of property. "But if you put in place land-use plans that create an attractive environment for a whole group of people," she added, "you raise the value of all the land and you get more tax revenues." The question is: How do you do that on a global scale?

Perhaps new restrictions should be placed on the lending of money to emerging countries. For instance, if bond holders were restricted

from selling out at precarious moments, that restriction could benefit struggling economies and the bond holders themselves. The world, noted Janeway, isn't a zero-sum game in which winners beget losers. Everyone could gain from globalization over the long term. As an example of how this kind of productive thinking can be globalized, Janeway brought up the popular simulation game SimCity (software that he helped fund). "I recommend all of you to play with it—as a way to look at both conflicts and opportunities in a non–zero-sum world."

Dramatic increases in foreign aid money also could play a major role. Thomas Friedman has written that it's obvious that the U.S. government needs to triple its spending on foreign aid, especially direct financial grants to struggling nations. John Kunzweiler of Accenture suggested that this money be tied to long-term reforms that raise the well-being of local populations. "Government should have longer-view solutions," Kunzweiler said. "We live today in an age when the president gives a speech and then they call their polls to see: How did I do? Where are the principles and long-view beliefs of the government?"

If we were to tie foreign aid more closely with reforms, what would those reforms be? What kind of localized government solutions, for instance, could boost the long-term prospects of countries in East Asia, Latin America, Africa, and the Middle East? One area that calls for innovative solutions is the creation of incentives for innovation itself. Abraham Lincoln said that the U.S. patent system "added the fuel of interest to the fire of invention" and attributed much of America's success to laws that enabled people to benefit financially from innovation. These innovations, large and small, lead to tremendous economic growth and rising living standards, which are necessary for the growth and maintenance of strong democracies.

Much of the debate over intellectual property laws now centers on whether U.S. drug makers should be providing free or low-cost AIDS treatments to the infected masses in Africa and elsewhere. There is the worry that if today's drugs are provided for free, there will be less incentive to invest in tomorrow's drugs to address diseases that have yet to be treated or cured. Providing drugs cheaply doesn't necessarily mean that patents are being violated, however. Some people are "getting intellectual property rules confused with pricing," said Edward Jung of Intellectual Ventures. "You can decide that you want to give something away for free or a dollar and that's perfectly within your rights to do that."

The larger issue is whether emerging countries can reform the way they treat their own internal intellectual property. "China is a very interesting example of this," said Bob Hormats. "China for a number of years was the quintessential example of a country that was frequently accused of pirating foreign technology. But significant changes are now underway in China. They now have enough self-confidence that they can generate their own internal technologies and their own innovation, and now they are increasingly of the view that they should be an advocate of protection of intellectual property rights. This is an interesting thing. If you are totally of the view that you cannot conceivably compete and the only way you can get technology is to steal it or get it for free, then you're not going to spend much time developing technology domestically or enforcing patents. Once you get the sense of confidence you can do it, you're going to change very dramatically, and China is an example of that."

So, for that matter, is the United States. "In the early 19th century," noted Firestone, "we were stealing everything." That observation suggests that we should have patience as we help other countries instill intellectual property protection into their cultures.

When government works with business on common goals, impressive results can follow. Derek Shearer cited the example of Finland as "a poor country that in the latter half of the 20th century made itself very rich" while maintaining "the lowest gap between top and bottom in any industrialized country." Of course, the Finns are a relatively small, homogenous population, but strict environmental regulations and an activist government didn't impede a strong private sector that has produced tremendous innovation in mobile telephony and other job-producing industries. Shearer cited examples of how wealthy Scandinavian countries are working with Baltic states to transfer knowledge about how to set up successful public-private partnerships.

One simple example of a constructive public policy is the minimum wage law. According to Ev Ehrlich, who held positions at the U.S. Census Bureau as well as the Commerce Department, minimum wage laws are very effective at driving up the price of unskilled labor—so effective, in fact, that they give businesses incentive to find technologies that replace those people. Cars replace rickshaws, for instance, and

electronic tollbooth scanners replace human toll collectors. "The wage gulf between unskilled and skilled labor is increasing," Ehrlich said. He estimates that about one-fourth of new jobs created in the United States in the 1990s were taken by illegal immigrants at the very bottom of the wage scale. "We need a $10 per hour minimum wage," Ehrlich said. "Then companies wouldn't waste humans. They would seek to replace humans with technologies. That's called investment, which drives economic growth, which drives higher-quality jobs."

A much more difficult problem to tackle is institutional reform, especially the gnarly problem of corruption—a crippling factor in countries ranging from Argentina to Nigeria to Saudi Arabia to India, just to name a few. Asa Briggs, a member of England's House of Lords, cited the example of Britain itself, which had a tremendous problem with institutionalized corruption in the middle of the 19th century but largely solved it because the public forced the government to impose institutional morality on itself. However, he said, "you don't need to have democracy to get rid of the considerable amount of corruption that there is in the world." Overall, he said, corruption is an issue that has never been properly understood: "There has never been a really great book on corruption."

These problems are so large that they must be understood and solved at a basic level. Briggs recommends Schumpeter's classic book, *Capitalism, Socialism and Democracy*, for an understanding of the way all modern social, business, and political forces interact with one another. "Schumpeter didn't put his faith entirely in politicians," Briggs said. "He put his faith in enterprise. There is such thing as social enterprise as well as corporate enterprise, and I can see partnership elements there which are of considerable value for the future of the world."

There was agreement among Roundtable participants that corporations need to take a more responsible approach to the goal of creating economic well-being around the world. "The corporate sector that operates around the world is beginning to realize that it cannot do well unless it has a social conscience or is more actively involved in social programs or it does something to deal with populist issues," said Hormats. "Groups of corporations have got to build the bridges between making money and being more sensitive to the expectations

that you see in developing countries. It is clearly the direction in which the process needs to go if we're going to reduce the pushback and rebellion and populist negativism."

Finally, there was agreement that we need to realize a greatly increased investment in education, especially with regard to using our new information tools to foster education. In a world in which most of our knowledge is gleaned from the two screens—the television and the computer—far more must be done to convert these technologies into more powerful learning tools. "We have not devoted enough money to technologies of education," said David Konzevik. "We need to shorten the time in which the people are able to learn. This should be the whole point of the knowledge explosion."

## Conclusion

In conclusion, the Roundtable participants struck an optimistic tone and agreed that things can eventually change for better. Kathleen Kennedy Townsend cited the example of Ireland, which in a short span of time has grown from an impoverished nation to a high-tech marvel that markets itself with the slogan "From potato chips to microchips." Bill Janeway agreed. "When I first went to Ireland in 1965," he said, "the idea that 35 years later, what was a country living off tales of victimhood for over 125 years with a population that was uneducated, that was under the thumb of a very powerful institutionalized dogma, would emerge as the most dynamic and creative social economy in Europe, that was absolutely impossible to imagine. So, if it can happen in Ireland...."

Although no one can predict with reasonable accuracy the true long-term consequences of today's epochal innovations, it is vital to recognize that the Internet time lag will be felt sharply over coming decades. There is much to be gained by anticipating the effects on the economy, on corporations, on human socialization, on politics, and on globalization. Only in doing so can we remove the barriers in the way of success.

To a large extent, old ways of thinking are impeding the true benefits of our current age of high-tech globalization. Not only do religious fundamentalists have dogmatic beliefs; so do millions of well-off citizens of industrial democracies. "If you look at all the conflicts we

have in the world," Konzevik said, "they become much more difficult to solve because of our dogmas. The information revolution is already bringing the possibility for the children of these dogmatic people to talk to people from various regions with different ideas and religions. I think Sigmund Freud was wrong when he said that civilization was born the day the savage man, instead of killing his enemy, simply shouted and walked away. I think real civilization will be born the day the dogma dies. We must very quickly dispel these dogmas and transform them into ideas, or else this world will go crazy."

## Notes

1. Thomas L. Friedman, *The Lexus and The Olive Tree: Understanding Globalization* (New York, Anchor Books, 2000), 401. See also Thomas L. Friedman, "World War III," *The New York Times*, September 13, 2001.

2. Michael Wines, "An Act of Terror Reshapes the Globe," *The New York Times*, September 30, 2001.

3. Thomas L. Friedman, *The Lexus and The Olive Tree: Understanding Globalization*, (New York, Anchor Books, 2000), 14.

4. Thomas L. Friedman, "A Tweezer Defense Shield?" *The New York Times*, October 19, 2001.

# APPENDIX

The Tenth Annual Aspen Institute
Roundtable on Information Technology

*The Next New Economy: Directions and Implications*

## List of Conference Participants

August 2-5, 2001
Aspen, Colorado

**Jean-Charles Bachellerie**
Managing Partner
Tioga Venture

**Lord Briggs (Asa)**
Former Chancellor
Britain's Open University
and
Member
House of Lords

**William Coleman**
Founder, Chairman and Chief Executive Officer
BEA Systems

**Ev Ehrlich**
President
ESC Company

**Charles M. Firestone**
Executive Director
Communications and Society Program
The Aspen Institute

**Ruth Goldway**
Commissioner
United States Postal Rate Commission

**John Hagel**
Chief Strategy Officer
12 Entrepreneuring, Inc.

**Robert D. Hormats**
Vice Chairman
Goldman Sachs (International)

**William Janeway**
Vice Chairman
Warburg Pincus

**Edward Jung**
Co-Founder
Intellectual Ventures
and
Acting Chief Executive Officer
OpenDesign, Inc.

**David Konzevik**
Chairman and Chief Executive Officer
Konzevik and Associates

**John T. Kunzweiler**
General Partner
Accenture Technology Ventures

**Robert Litan**
Vice President and Director
Economics Studies Program
Brookings Institution

Note: Titles and affiliations are as of the date of the conference.

**Juan Moran**
Chairman and Chief Executive Officer
Newknow

**Jerry Murdock**
Co-Founder and Managing Director
Insight Capital Partners

**Stefano Rodotá**
President
Garante per la protezione dei dati personali [Italian Data Protection Authority]

**Eric Schmidt**
Chairman and Chief Executive Officer
Google, Inc.

**Evan I. Schwartz**
Independent Journalist
and
Author of *Digital Darwinism*

**Derek Shearer**
Director of Global Affairs
Occidental College

**Kathleen Kennedy Townsend**
Lieutenant Governor
State of Maryland

**Hal Varian**
Dean
School of Information Management and Systems
University of California

*Staff:*

**Sunny Sumter-Sana**
Senior Program Coordinator
Communications and Society Program
The Aspen Institute

Note: Titles and affiliations are as of the date of the conference.

# About the Author

**Evan I. Schwartz**, author and journalist, is a former editor at *BusinessWeek*, where he covered software and digital media. He was part of teams that produced 12 cover stories and won a National Magazine Award and a Computer Press Award. In recent years he has contributed to *The New York Times*, *Wired*, and *Technology Review*.

Evan's first book, *Webonomics*, anticipated the emergence of the Web economy and offered nine strategic principles. Published in 1997 by Broadway Books, a division of Random House, it has ranked as Amazon.com's #1 bestselling business title and was chosen as a finalist for a Global Business Book Award as well as a Computer Press Award. International editions have been published in eight countries.

Evan's second book, *Digital Darwinism*, anticipated the Darwinian shakeout among the dot-com species and served up seven survival strategies. Also published by Broadway Books, it hit #1 on Amazon's business list shortly after its release in June 1999. After 12 hardcover printings in the United States, *Digital Darwinism* has recently been issued in paperback and has been translated into nine languages. It too was a finalist for a Computer Press Award.

Evan's third book, *The Last Lone Inventor: A Tale of Genius, Deceit, and the Birth of Television*, is a nonfiction narrative set for release in 2002 from HarperCollins Publishers.

Evan holds a B.S. in computer science from Union College in Schenectady, New York, and now lives with his family in Brookline, Massachusetts.

# The Aspen Institute Communications and Society Program

**www.aspeninstitute.org/c&s**

The Communications and Society Program is a global forum for leveraging the power of leaders and experts from business, government and the nonprofit sector in the communications and information fields for the benefit of society. Its roundtable forums and other projects aim to improve democratic societies and diverse organizations through innovative, multidisciplinary, values-based policymaking. They promote constructive inquiry and dialogue and the development and dissemination of new models and options for informed and wise policy decisions.

In particular, the Program provides an active venue for global leaders and experts from a variety of disciplines and backgrounds to exchange and gain new knowledge and insights on the societal impact of advances in digital technology and network communications. The Program also creates a multidisciplinary space in the communications policymaking world where veteran and emerging decision makers can explore new concepts, find personal growth and insight, and develop new networks for the betterment of the policymaking process and society.

The Program's projects fall into one or more of three categories: communications and media policy, communications technology and the democratic process, and information technology and social change. Ongoing activities of the Communications and Society Program include annual roundtables on journalism and society, international journalism, telecommunications policy, Internet policy, information technology, and diversity and the media. The Program also convenes the Aspen Institute Forum on Communications and Society, in which CEOs of business, government, and the nonprofit sector examine issues relating to the new technologies and lifelong learning.

Conference reports and other materials are distributed to key policymakers and opinion leaders within the United States and around the world. They are also available to the public at large through the World Wide Web.

**Charles M. Firestone** is executive director of the Aspen Institute Communications and Society Program. Prior to joining the Aspen Institute in 1989, Mr. Firestone was director of the Communications Law Program at the University of California, Los Angeles (UCLA) and an adjunct professor at the UCLA Law School. He was also first president of the Los Angeles Board of Telecommunications Commissioners. Mr. Firestone's career includes positions as an attorney at the Federal Communications Commission, as director of litigation for a Washington, D.C. based public interest law firm, and as a communications attorney in Los Angeles. He has argued several landmark communications cases before the United States Supreme Court and other federal appellate courts.

# Previous Publications from the Aspen Institute Roundtable on Information Technology

*The following publications were all authored by David Bollier.*

*Uncharted Territory: New Frontiers of Digital Innovation* (2001)

This report looks critically at key insights on the new economy and its implications in light of the digital revolution. The report begins with an examination of the interplay between the current economy and the capital economy and then probes the emerging world of mobile commerce and its potential for driving the next great boom in the economy. It further explores new business models resulting from the combination of mobile communications and the new economy.

68 pages, ISBN Paper: 0-89843-307-X 12.00 per copy.

*Ecologies of Innovation: The Role of Information and Communications Technologies* (2000)

This report explores the nature of innovation and the role of information and communications sectors in fostering ecologies of innovation. In this context, the report examines the ways that the creation of new ecologies are affecting significant societal institutions and policies, including foreign policies, industry and business structures, and power relationships.

44 pages, ISBN Paper: 0-89843-288-X, $12.00 per copy.

*The Global Wave of Entrepreneurialism: Harnessing the Synergies of Personal Initiative, Digital Technologies, and Global Advance* (1999)

This report examines problems arising from the growth of entrepreneurialism and digital techologies.

41 pages, ISBN Paper: 0-89843-264-2, $12.00 per copy.

*The Global Advance of Electronic Commerce: Reinventing Markets, Management, and National Sovereignty* (1998)

This report addresses issues of electronic commerce in the context of global marketplace impact and the transformation of national sovereignty.

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*The Networked Society: How New Technologies Are Transforming Markets, Organizations, and Social Relationships* (1997)

This report explores how electronic networking—the Internet and intranets—is transforming commerce, organizational performance and leadership, business and social relationships, and personal identity and allegiances.

43 pages, ISBN Paper: 0-89843-213-8, $10.00 per copy.

*The Future of Electronic Commerce* (1996)

This report examines communications and information technologies that are redefining the fundamental conditions and relationships of commercial transactions, as well as the implications of the new electronic commerce for individuals, businesses, and society.

64 pages, ISBN Paper: 0-89843-188-3, $10.00 per copy.

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*The Promise and Perils of Emerging Information Technologies* (1993)

This report explores the use of complex adaptive systems as a model for determining information technology's role in the workplace and in diverse societal settings. It includes a background paper by John Seely Brown, Paul Duguid, and Susan Haviland titled, "Towards Informed Participants: Six Scenarios in Search of Democracy in the Electronic Age," which offers progressive scenarios of how the interaction of humans and information technologies might influence and affect democratic life in the coming decade.

44 pages, ISBN Paper: 0-89843-149-2, $10.00 per copy.

*The Information Evolution: How New Information Technologies are Spurring Complex Patterns of Change* (1993)

This report explores the use of a new paradigm of co-evolving complex adaptive systems for thinking about information, information technologies, and information-oriented societies.

28 pages, ISBN Paper: 0-89843-132-8 $10.00, per copy.

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